

REMARKS

The Applicants respectfully request reconsideration in view of the following remarks and amendments. Claims 7 and 13 have been amended. Claims 1-6 were previously cancelled. Claims 10-12 were previously withdrawn. No claims have been added. Accordingly, claims 7-9 and 13 are pending in the Application.

I. Claim Rejections – 35 U.S.C. §102

In the outstanding Action, claims 7, 8 and 13 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Publication No. 2006/00181120 by Linehan et al. (hereinafter “Linehan”).

To anticipate a claim, a single reference must disclose each element of that claim. Thus, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Also, “[t]he elements must be arranged as required by the claim.” *See In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990) and MPEP § 2131.

In regard to claim 7, this claim has been amended. These amendments are supported by the Specification as described below.

Claim 7 has been amended to recite “a first through hole in which the recess of said LED reflecting plate is to be fitted, said first through hole being formed as a circular cylindrical hole which is substantially straight and vertical to said printed wiring board” (emphasis added). These amendments are supported, for example, by FIGs. 3B and 4B, page 7, lines 18-20 and from page 8, line 25 to page 9, line 6 of the Specification as filed. It will be apparent, in the present invention, that since the space 10 surrounded by the LED chip mounting portion and the reflecting portion 8 has a frustoconical shape and the first through hole 18 has a diameter R2 slightly larger than the outer diameter R1 of the upper end of this space 10 the first through hole comprises a round hole. The feature that the first through hole is formed vertically straight can be clearly seen in FIG. 3B.

Further, claim 7 has been amended to recite “a plating film formed so as to cover continuously the entire surfaces of upper and bottom peripheral edges and a circumferential wall of said first through hole, wherein the plating film is separate from the LED reflecting plate.” These amendments are supported, for example, by page 9, lines 7-17, and FIG. 3D and FIG. 5B of the Specification.

Additionally, claim 7 has been amended to recite “a flange, formed on and along the entire circumference of an upper peripheral edge of the recess, to be bonded onto said plating film at a position thereof along and corresponding to the upper peripheral edge of said first through hole of said printed wiring board.” These amendments are supported, for example, by page 7, lines 10-12, page 9, lines 12-17, page 10, lines 9-15, and in FIGs. 1, 2A, 2B, 3D and 4B of the Specification.

Thus, the recited elements of amended claim 7 have proper support in the Specification for the reasons presented above. The Applicants submit that claim 7 as amended is not taught by Linehan.

Linehan teaches an illuminator having a taper-shaped cavity 3 formed from a plurality of stacked substrates 7. The Applicants submit that it is not possible to form the cavity or cavities 3 *en bloc* from the substrate of Linehan. Specifically, it would be impossible to form the cavity or cavities through a plurality of stacked substrates 7 by drilling or punching through the substrates. Consequently, the cavities must be formed in each substrate one-by-one. By requiring the individual creation of the cavities in each substrate, an increased cost is incurred.

In contrast, according to amended claim 7, the first through holes formed in a printed wiring board are each straight, circular, and vertical to the wiring board. Consequently, the device of claim 7 allows the possibility of forming the through hole or through holes *en bloc* in a plurality of stacked printed wiring boards by drilling or punching, thus allowing a significant reduction in manufacturing cost. By failing to disclose a substrate which permits forming the through hole or through holes *en bloc*, Linehan fails to teach each element of amended claim 7.

Further, amended claim 7 recites “a flange, formed on and along the entire circumference of an upper peripheral edge of the recess, to be bonded onto said plating film at a position thereof along and corresponding to the upper peripheral edge of said first through hole of said printed wiring board.” Thus, the flange of the LED reflecting plate is bonded onto the plating film at the upper peripheral edge of the first through hole. This plating film is formed so as to continuously cover the entire surface of the upper peripheral edge from the circumferential wall to the bottom peripheral edge of the first through hole. Since such a structural arrangement of the plating film, as described above, will have the effect of improving the adhesion between the upper peripheral edge of the first through hole and the plating film, the LED reflecting plate bonded to the plating film can be prevented from coming off the printed wiring board even when an external force is exerted on the LED reflecting plate. Further, since heat from the LED reflecting plate is

efficiently dissipated to the outside of the plating film at the upper peripheral edge of the first through hole through its circumferential wall and the plating film at the bottom peripheral edge of the hole, a significant improvement in heat dissipation will be achieved. Thus, the LED device of amended claim 7 has improved durability and heat dissipation based on the design of the plating film.

In contrast, Linehan teaches a reflective coating 4(a) which coats cavity 3. The Examiner argues that the reflective coating 4(a) is analogous to the LED reflecting plate of claim 7. Although the reflective coating 4(a) is analogous to the LED reflecting plate of amended claim 7, Linehan does not teach any element corresponding to the “plating film” of claim 7. Specifically, Linehan does not teach a plating film which is separate from the LED reflecting plate as recited in amended claim 7. Thus, Linehan fails to disclose a plating film as disclosed in amended claim 7.

For the reasons provided above, amended claim 7 is not anticipated by Linehan. Accordingly, the Applicants respectfully request reconsideration and withdrawal of the rejection of claim 7.

Further, claim 13 has been amended to recite “a cooling member which is in contact with a bottom of the recess of said LED reflecting plate and with said plating film at a position thereof corresponding to the bottom of said first through hole.” These amendments are supported, for example, page II, lines 6-12 and in FIG. 5A of the Specification page I. Accordingly, the Applicants respectfully request entry of these amendments.

Claims 8 and 13 depend from independent claim 7 and incorporate the limitations thereof. Thus, at least for the reasons discussed above in regard to independent claim 7, Linehan does not teach each element of the dependent claims 8 and 13. Accordingly, the Applicants respectfully request reconsideration and withdrawal of the rejection of these claims.

II. Claim Rejections – 35 U.S.C. §103

In the Action, claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Linehan in view of U.S. Patent No. 6,730,933 issued to Shimizu et al. (“Shimizu”).

To determine obviousness of a claim: (1) factual findings must be made under the factors set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966); and (2) the analysis supporting the rejection under 35 U.S.C. § 103 should be made explicit and there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. See MPEP §§ 2141(II), 2141(III), and 2142; KSR International Co. v. Teleflex

Inc., 82 USPQ2d 1385, 1396; see e.g., MPEP § 2143 (providing a number of rationales which are consistent with the proper “functional approach” to the determination of obviousness as laid down in Graham).

In regard to claim 9, this claim depends from claim 7 and incorporates the limitations thereof. The Examiner’s argument presumes that each of the elements of claim 7 are disclosed by Linehan. However, as outlined above in the Applicants’ argument over the 35 U.S.C. § 102 rejections, Linehan fails to disclose each element of claim 7.

Further, Shimizu fails to cure the deficiencies of Linehan. In rejecting claim 9, the Examiner contends that the first electrode 15 of Shimizu, which is mounted with the light emitting diode, is analogous to the LED reflecting plate of the current claims. Even if this first electrode 15 were to be applied to the illuminator of Linehan so as to substitute the reflective coating 4(a) with the first electrode 15, the LED reflecting plate and the plating film could not be functionally combined. In light of the foregoing, it cannot be concluded that it would have been obvious to a person having ordinary skill in the art to provide a plating film separate from an LED reflecting plate as recited in amended claim 7.

Thus, by not disclosing a plating film separate from the LED reflecting plate, Shimizu fails to cure the deficiencies of Linehan. Therefore, each element of claim 7, which is incorporated in claim 9, is not taught or suggest by the combination of Shimuzu and Linehan. Accordingly, the Applicants respectfully request reconsideration and withdrawal of the rejection of claim 9.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending are now in condition for allowance and such action is earnestly solicited at the earliest possible date. If there are any additional fees due in connection with the filing of this response, please charge those fees to our Deposit Account No. 02-2666. Questions regarding this matter should be directed to the undersigned at (310) 207-3800.

Respectfully submitted,

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